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Costing the Basic Benefits Package in Egypt

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Partnerships for Health Reform
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Mission

The Partnerships for Health Reform (PHR) Project seeks to improve people's health in low- and middle-income countries by supporting health sector reforms that ensure equitable access to efficient, sustainable, quality health care services. In partnership with local stakeholders, PHR promotes an integrated approach to health reform and builds capacity in the following key areas:

- *Better informed and more participatory policy processes in health sector reform;*
- *More equitable and sustainable health financing systems;*
- *Improved incentives within health systems to encourage agents to use and deliver efficient and quality health services; and*
- *Enhanced organization and management of health care systems and institutions to support specific health sector reforms.*

PHR advances knowledge and methodologies to develop, implement, and monitor health reforms and their impact, and promotes the exchange of information on critical health reform issues.

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United States Agency for International Development

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Acronyms

ARI	Acute Respiratory Infection
BBP	Basic Benefits Package
CAPMAS	Central Agency for Population Mobilization and Statistics
DHS	Demographic and Health Survey
FHC	Family Health Center
FHU	Family Health Unit
HIO	Health Insurance Organization
IEC	Information, Education, Communication
IMCI	Integrated Management of Childhood Illness
L.E.	Egyptian Pound (1L.E. = US$ 0.29)
MOHP	Ministry of Health and Population
PEHS	Package of Essential Health Services
PHR	Partnerships for Health Reform Project (USAID)
RHD	Rheumatic Heart Disease
TSO	Technical Support Office (Ministry of Health and Population, Egypt)
USAID	United States Agency for International Development

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This work would not have been possible without the support of the Technical Support Office (TSO) of the Egyptian Ministry of Health and Population (MOHP).

The TSO, under the guidance of Dr. Wagida Anwar, has constituted a working group for this activity. This working group is headed by Dr. Hosni Tamam and draws upon representatives from the MOHP, as well as outside expertise with a view to coordinate with other projects (like the Social Fund) that are involved in similar activities. The name of persons in the working group is given below:

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Executive Summary

This document describes a methodology proposed for costing a package of essential health services which was developed by the PHR Project in collaboration with the Ministry of Health and Population of Egypt (MOPH). In Egypt, this package is called the Basic Benefits Package, or BBP. This BBP costing model is a computational tool which can help policymakers in several ways: determine resource needs and costs for the BBP given policy targets, optimize resource allocation by comparing competing policy scenarios, identify gaps between resource supply and demand; and assist in long-term planning.

Development of the BBP and the BBP costing methodology are part of PHR's program of technical assistance to the Government of Egypt which is committed to an ambitious health sector reform program. The reform program is designed to improve the health and well being of its citizens by providing universal coverage for a minimum set of basic health services.

This methodology was applied to the Alexandria Governorate of Egypt and all data and results presented in this document reflect the cost of delivering the BBP to target populations in this geographic area. The cost of inputs (personnel, drugs, equipment, diagnostic tests, rent, etc.) was computed for the most peripheral level of the three-tier delivery system: the Family Health Unit (FHU). An estimate of 40 percent was used to represent the incremental costs of referring patients to for ancillary services and in-patient admissions. The model does not include the cost of IE&C programs nor the reserves to be set up for insurance funds. To project the cost of the BBP in the future, inflation was assumed to be 6.2 percent per year.

Under the assumptions summarized above, the Egyptian BBP would cost 48 L.E. (Egyptian pounds) per capita (US $14) if implemented for the target population of 3,384,391 people in Alexandria. Thirty-one percent of this cost is for personnel, 27 percent is for drugs and diagnostic tests, and 42 percent is for overhead costs, non-BBP services, and referrals for ancillary services and inpatient care. While the 42 L.E. result is consistent with previous estimates, it must be viewed as a base line estimate that will have to be confirmed by collecting actual cost and utilization data during a pilot test in Alexandria.

The methodology could be adapted to any country, and for this reason, the authors have prepared this document for wide dissemination and have made the spreadsheet program available on the PHR website (www.PHRproject.com). Those without access to the Web may request the file from the PHR Resource Center at pub_order@PHRproject.com. It is hoped that the methodology and spreadsheet tool presented here can facilitate the adoption and financing of essential health services.

1. Introduction

This document describes a methodology proposed for costing a package of essential health services which was developed by the PHR Project in collaboration with the Ministry of Health and Population of Egypt (MOPH). In Egypt, this package is called the Basic Benefits Package or BBP. The BBP methodology was incorporated into an Excel spreadsheet program. This BBP model is a computational tool, which can help policymakers:

- Determine resource needs and costs for the BBP given policy targets
- Optimize resource allocation by comparing competing policy scenarios
- Identify gaps between resource supply and demand
- Assist in long-term planning

This methodology was applied to the Alexandria Governorate of Egypt and all data and results presented in this document reflect the cost of delivering the BBP to target populations in this geographic area. However, the methodology could be adapted to any country. For this reason, the authors have prepared this document for wide dissemination and have made the spreadsheet program available through the PHR Information Center.

This presentation of the BBP costing methodology begins with a brief background description of the health sector reform program in Egypt and the development of the BBP specifically. Next, an overview of the main components of the methodology and how they interconnect is provided. This overview is followed by a detailed discussion of each component, which includes presentation of the five worksheets of the spreadsheet program. The treatment protocols used for the BBP are presented in the Annex to this report.

2. Background

The Government of Egypt has committed to an ambitious health sector reform program designed to improve the health and well-being of its citizens by providing universal coverage for a minimum set of basic health services. The existing health system is fragmented, vertically oriented, top-heavy, and inefficient. Health services are inequitably distributed, both geographically and by social group. The MOHP has developed a health reform program that is guided by principles of universality, equity, efficiency, quality, and sustainability. A multi-donor group, consisting of the World Bank, USAID, and the European Union currently supports the reform. USAID provides both budgetary support, with funds released by tranche upon achievement of an agreed-upon set of benchmarks, and technical assistance support in the form of a PHR team of long-term advisors, complemented by periodic short-term expertise. PHR's activities have concentrated on six areas:

- Primary care expenditure and resource allocation.
- Rationalization of curative care.
- Reform of health sector human resources policy.
- MOHP capacity-building in quality assurance, regulation and accreditation, MIS, planning, policy analysis, and management.
- Strengthening the sustainability of the Health Insurance Organization (HIO).
- Expansion of social health insurance.

Determination of a basic health benefits package has been a critical step in Egypt's health sector reform process. Since the 1993 *World Development Report* (World Bank 1993) proposed a package of essential health services (PEHS), many countries around the world have embarked on defining and costing such packages. In the short term, designing a PEHS can making explicit the need to ration health services and providing an objective basis to negotiate national priorities. In the long term, adoption of a PEHS is expected to improve health status and expand coverage of health services for the poor through a more equitable distribution of public funds.

A PEHS is supposed to be an integrated collection of cost-effective health interventions. Ideally, deciding what services to include in the package should be guided by analysis using sound epidemiological and economic methods (e.g. assessing a country's burden of disease and analyzing the cost effectiveness of alternative interventions). This process of data collection and analysis can consume significant time and resources. A study of 18 package building exercises concluded that it was possible to design a PEHS in the developing world with methods consuming fewer resources, yet still remain within *World Development Report*-recommended guidelines. (Jose-Luis Bobadilla and Peter Cowley. 1995. *Journal of International Development* 7(3), 543-554.) It is hoped that the methodology and spreadsheet tool presented here can facilitate the adoption of PEHS.

In the case of Egypt, the content of the BBP was the result of many discussions held at the national level in Cairo, and the governorate level in Alexandria. These discussions involved key MOHP staff, including representatives of the Technical Support Office, the Primary Health Care and

the Maternal/Child Health Directorates, Program Managers, members of the Quality Improvement unit, as well as technical staff from the World Bank and the European Union. As a result of application of the costing methodology, the BBP presented in this document (see below) is slightly different from versions presented earlier (Berman, P., M. El-Adawy . A.K. Nandakumar, et al. August 1997. *A Reform Strategy for Primary Care in Egypt*. Technical Report No. 9, Bethesda, MD: PHR; and MOHP. 1998. *Agenda for Health Sector Reform*.)

Basic Benefits Package for Egypt

Child Health Services
Immunization
Growth Monitoring
Vitamin A and Iron Supplements
IMCI: ARI and Diarrheal Diseases
Chronic Compensated RHD

Maternal Health Services
Family Planning
Pills and IUD insertion
Antenatal Care
Normal Delivery (clinic)
Post Natal Care

Services for All Age Groups
Communicable Diseases
Hypertension
First Aid
Diabetes
Fever
Conjunctivitis

The proposed methodology is a hybrid of traditional costing techniques and a "production model" approach to determine human and material resource requirements to provide the basic package at an acceptable level of quality and efficiency. A new costing methodology was needed because the service delivery system and the provider incentive structure will undergo significant change under the reform process so using average costs would not allow adjusting for quality and improved productivity. Appropriately costing the benefits package is an important activity as it will determine both what services to provide as well as how to finance these services. Please note that the costing of the BBP represents ongoing work and is also being used to develop a resource-planning model.

The Egyptian BBP is being tested as part of a broader pilot test of the new health care delivery and financing systems proposed by the health sector reform program. The new delivery system consists of three tiers: the family health unit (FHU), the family health center (FHC), and referral for inpatient services. The new financing system consists of the creation of a Family Health Fund that will develop capitated performance-based contracts with providers (facilities and physicians). The Fund will build on the existing Health Insurance Organization. In addition, minimum facility accreditation standards will be tested.

The pilot test began in Alexandria in late 1998. The lessons of the Alexandria pilot will provide a basis of experience for the other two pilots in Menoufia and Sohag. It is expected that these three experiences will help the long-term reform, which has a 15-20 year time horizon, to move forward successfully by providing a model.

3. Methodology

3.1 Overview of BBP Costing Methodology

Broadly, the following steps were taken to develop this methodology:

- Research and define assumptions regarding treatment protocols, cost of drugs and lab tests, cost and productivity of human resources; population size.
- Define a series of algorithms, which project the cost of the BBP. The cost projections are presented per service, per episode, per capita; as well as total costs by cost category (drugs, lab tests, physician etc.) for a defined population.
- Incorporate all the assumptions and algorithms into a spreadsheet program which allows users to experiment with different scenarios. The spreadsheet format easily accommodates changes in the assumptions about costs, incidence of illness, or utilization of services, and the affect on the cost of the BBP. Figure 1 on the following page illustrates the five components of the BBP Costing spreadsheet program.

As mentioned before, the methodology was applied to the Governorate of Alexandria in Egypt. Also, the cost of inputs (personnel, drugs, equipment, diagnostic tests, rent, etc.) were computed for the most peripheral level of the three-tier delivery system: the Family Health Unit. The Family Health Center will provide most of the ancillary services and an estimate of 40 percent was used to represent the incremental costs of referring patients to FHC and in-patient admissions.

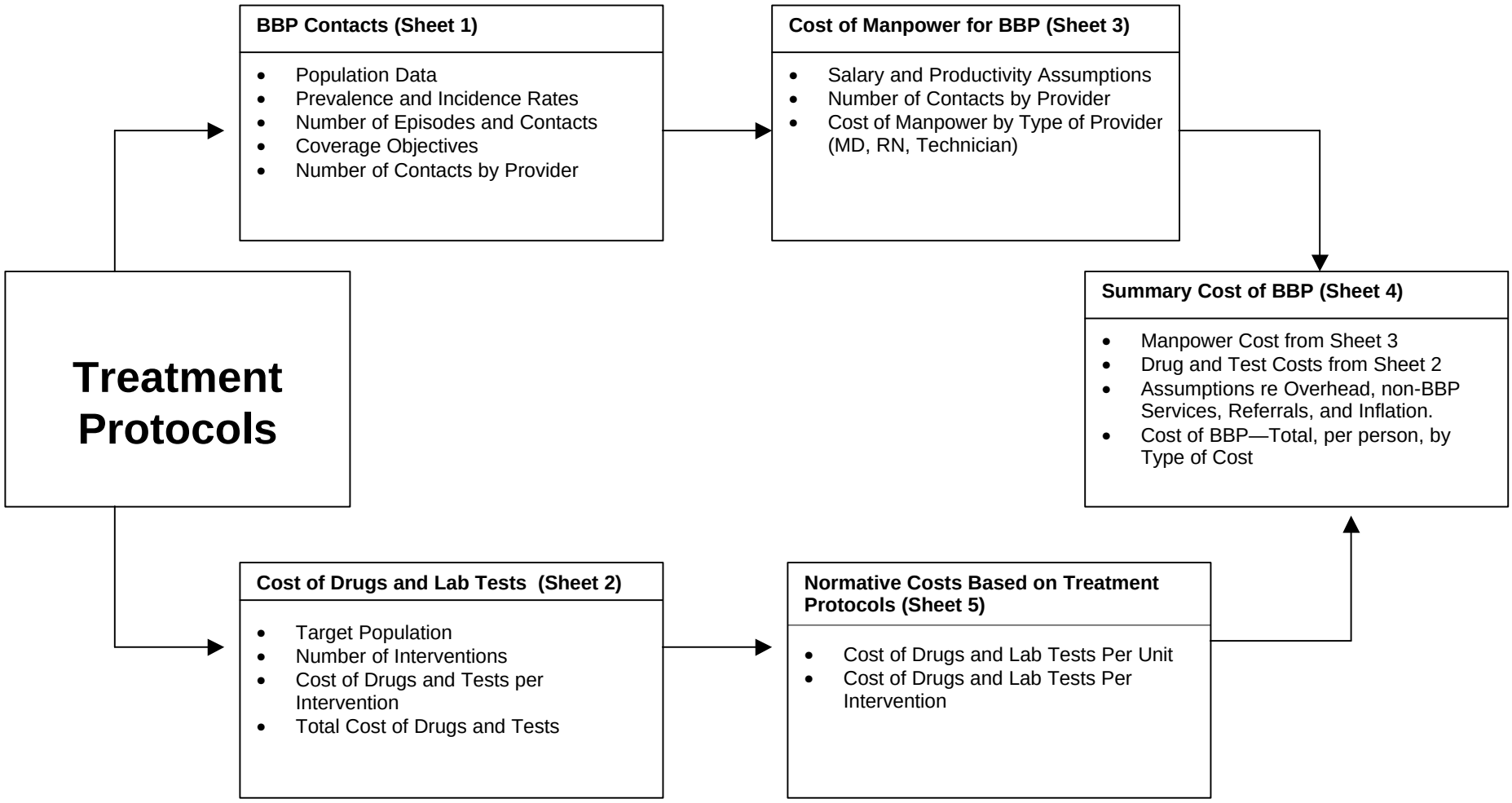
Cost categories used in this model include:

- Personnel (physicians, nurses, lab technicians)
- Drugs
- Investigation costs (diagnostic tests)
- Overhead costs: amortized capital costs (facility, equipment); system and administration costs; and other overhead costs

The model does not include the cost of IE&C programs nor the reserves to be set up for insurance funds. To project the cost of the BBP in the future, inflation was assumed to be 6.2 percent per year based on an estimate of the increase of the consumer price index in 1996-1997.

Figure 1 presents a visual overview of the components of the spreadsheet model. There are five sheets. The numbering of the sheets reflects how they are numbered in the spreadsheet file.

Figure 1. BBP Costing Methodology Spreadsheet Components



3.1.1 Sources of Data

Vertical health program guidelines (e.g. for immunization, family planning, and maternal health services) served as the basis for setting up target coverage objectives and treatment protocols to calculate the costs of drugs and manpower. This approach was relatively easy to follow for Child and Reproductive health. Adult health was more problematic as very few guidelines have been developed to assist case management of adult illness in Egypt. Sources on adult health care included: National Program for Schistosomiasis, National Hypertension Project, Kumar and Clark Textbook of Clinical Medicine. In addition recommendation for case management were provided by several experts from the Diabetes Institute and the Cairo Skin and Venereal Hospital.

Whenever necessary, we used existing data on incidence and prevalence available in vertical program reports and the most recent Demographic and Health Survey (DHS) 1997. The sources also provided information on the distribution of cases by degrees of severity, which was used to determine the cost of treatments.

Whenever possible Prevalence and Incidence figures are specific for Alexandria. Data used for diarrheal diseases, ARI, tuberculosis, and schistosomiasis are extracted from the annual program reports completed at the Governorate level. The prevalence of hypertension and diabetes is a national estimate taken from the 1995 National Hypertension Report, and the annual statistics of the Diabetes Institute. Family planning utilization rates and pregnancy rates were based upon the 1997 DHS. Finally, the size of the different target groups was obtained from the Central Agency for Population Mobilization and Statistics (CAPMAS).

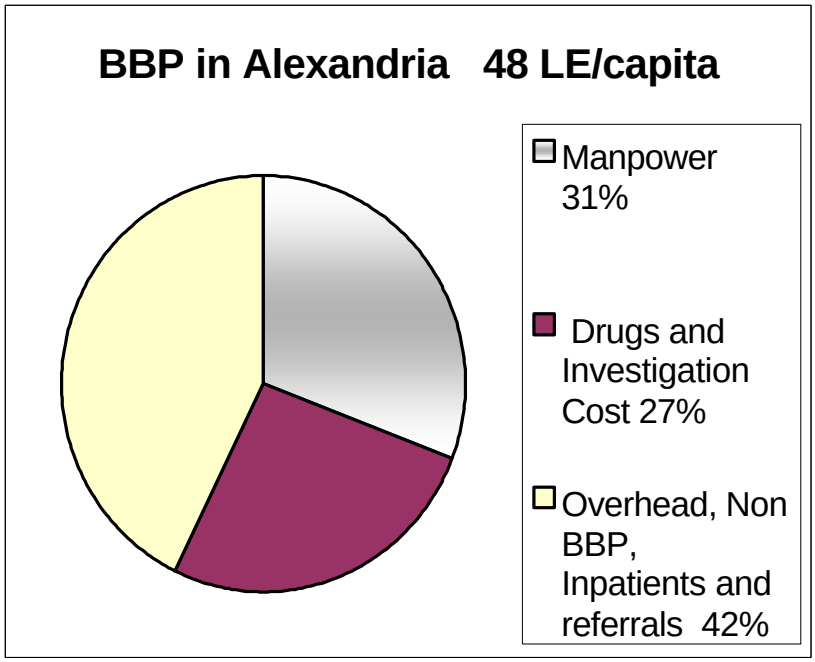
This final version of the package represents the minimum set of services that should be available from public (and later, from non-public) providers and will be covered by the insurance plan. It does not prevent public or private facilities from delivering additional services that are not included in the package. A 15 percent increase was added to reflect the cost of covering “non package” services. (mainly the time spent by health workers and share of the overhead costs)

The National Essential Drug List and Guidelines (MOHP 1998), was used to determine the costs of treatments. It must be noted that prices in the essential drug list are market prices and are different from what the MOHP pays for drugs as a result of negotiations with drug companies.

3.1.2 Baseline Results

Under the assumptions summarized above, the Egyptian BBP would cost 48 L.E. (Egyptian pounds) per capita (US $14) if implemented for the target population of 3,384,391 people in Alexandria. Thirty-one percent of this cost is for personnel, 27 percent is for drugs and diagnostic tests, and 42 percent is for overhead costs, non-BBP services, and referrals for FHC services and inpatient care (Figure 2). While the 42 L.E. result is consistent with previous estimates, it must be viewed as a base line estimate that will have to be confirmed by collecting actual cost and utilization data during the pilot test in Alexandria.

Figure 2. Projected Cost of Basic Benefits Package, Alexandria



3.2 Contacts for BBP (Sheet One)

Sheet One, "Contacts for BBP" calculates the number of expected contacts for the entire Alexandria population for the services and conditions covered by the BBP. A "contact" is defined as a visit to receive services. Sheet One begins with the list of BBP services and conditions in column 1. Columns 2 through 5 contain data regarding target populations in Alexandria, and prevalence and incidence rates for BBP services and conditions. Columns 6 through 10 contain assumptions regarding the number of episodes and contacts per year which reflect case management protocols and treatment Protocols for BBP services and conditions. Column 11 presents the coverage objective, which is the percentage of the target population that the BBP hopes to cover. The remaining columns in Sheet One, 12 through 19, contain the resulting number of contacts presented per individual covered, total, and by type of provider (physician, nurse, technician). The content of each column is discussed individually below.

Column	Definition	Description of information
1	Conditions covered	World Bank Implementation Plan
2	Target population for each intervention	Program recommendations for target populations *CAPMAS population
3	Number of target population for each intervention	Program recommendations for target populations *CAPMAS population
4	Prevalence rate – number of existing cases/conditions among the target population	Vertical program reports Demographic and Health Survey 1997
5	Incidence rate – number of new cases per target population in a year. For certain conditions such as diarrhea or ARI 1 was used as the incidence rate although the number of episodes per year and per child is higher (3 and 5). The number 1 is not a true incidence rate but expresses the fact that all children will be affected by the problem in a given year. The true incidence rate appears in column 6. These adaptations of common definitions were necessary because the package includes acute and chronic conditions as well as preventive services.	Vertical program reports Demographic and Health Survey 1997
6	Number of episodes per year for each individual in target population who is affected by either chronic or acute condition or requires preventive services	Vertical program reports Discussions with MOHP experts
7	Number of episodes which require facility-based care	Discussions with MOHP experts
8	Number of contacts required per episode in column 7 – an episode may require multiple contacts with a Family Health Unit	Discussions with MOHP experts
9	Number of contacts per year	a product of column 7 multiplied by column 8
10	Number of visits adjusted for multiple services that can be addressed in one visit, example growth monitoring and vaccination	Discussions with MOHP experts
11	Percentage of program coverage objective or a reasonable expected coverage when no objective has been defined or when these objectives are far too unrealistic. For example, the program objective for growth monitoring may be 80% for all children under 5 but the current coverage being less then 1%, a 15% figure was arbitrarily retained. The assumptions related to coverage are discussed in the second section of this document.	Discussions with MOHP experts
12	Number of expected contacts per individual in target population per year and per illness or service	column 10 multiplied by column 11
13	Number of expected contacts per year for Alexandria Governorate population	column 12 multiplied by column 2
14	Number of contacts by physician	Discussions with MOHP experts
15	Number of contacts by nurses	Discussions with MOHP experts
16	Number of contacts by lab technicians	Discussions with MOHP experts

Column	Definition	Description of information
17	Total number of contacts by physician	multiply column 14 by target population
18	Total number of contacts by nurses	multiply column 15 by target population
19	Total number of contacts by lab technicians	multiply column 16 by target population

3.3 Assumptions for the BBP

As discussed above, Sheet One contains assumptions about prevalence, incidence, number of episodes, demand for facility based care, the coverage objectives and the distribution of work between different types of health personnel. It is useful to describe in some detail the choices and decisions underlying these important assumptions. These choices and decisions were made as a result of consultation with many local and international sources and experts, as described in the Treatment Protocols (see the Annex). The advantage of the spread sheet methodology is that these assumptions can be easily changed to reflect changes in case management or policy objectives, improved coverage rates, and other circumstances.

1. Immunization:
With BCG, OPV, DPT, measles and HepB
Boosters of DT and BCG at 6 and 9
5 contacts during the first year, 1 during the following 3 years
96% coverage
1 contact with a physician during the first year, 8 contacts with a nurse during the first nine years.

3. Vitamin A supplementation: during the first two years. No additional visit required. Combined with vaccination

2. Growth monitoring: 5 visits during the first year, 2 during the second year and one during the following 3 years. Given the very modest current coverage, the coverage objectives used in this spreadsheet are 15%. During the first year no additional visit are required as the infant will be weighed during the vaccination session.

5. IMCI

5.1 Diarrheal Disease: CDD program officers suggested that 3 episodes per child per year were reasonable for Alexandria. Out of these 3 episodes we assumed that half would require facility-based treatment. Each will require two visits and the coverage objective is 80%. Physicians will see all cases. Half of the visits will require a doctor and a nurse.
The breakdown of cases used to determine the cost of treatment is based upon the 1997 CDD program report.
Treatment protocols are described in the Annex.

5.2 Acute Respiratory Infection: The expected incidence was 5 episodes per year per child. 4 out of 5 will require facility-based care and two visits each time. The coverage objective is 80%. A physician sees all cases. One visit out of five will require both a doctor and a nurse.
The assumptions used to calculate the cost of the treatment were based on the 1997 annual program report, which describes the distribution of each type of ARI at the governorate level. Treatment protocols are described in the Annex.

6. Rheumatic Heart Disease: was maintained in the package after many discussions. The spreadsheet only includes the cost of regular visits for chronic patients. A report on Rheumatic Heart Disease control program in Egypt, September 1994, found a prevalence of 0.2% in the 5 to 20 population. This would require two visits per year per patients with a coverage objective of 50%. A physician would view all.

7. Family Planning: data were obtained from the Family Planning Directorate. 86% of the 70% in the target population who use contraceptive service are IUD users and 13% use oral contraceptive. Other methods were not sufficiently prevalent to be included in the costing activity. IUD requires attendance by a physician and a nurse (or a midwife). Oral contraceptive only requires a physician.

N.B.# of visits needed for IUD insertion is 2, but as the same IUD is used for 2 years, its cost is divided by 2 and its visits are adjusted to 1/year.

8. Antenatal Care
5 visits required per pregnancy (incidence is 11% in the target population of married woman of child baring age). The coverage objective is 80% of pregnant women (which would represent a significant increase from the current coverage of 52.5% (DHS 1997). Each consultation would require a doctor and a nurse. One visit will involve a lab technician. (Urinalysis, Hb)

9. Normal Delivery
60% of pregnant women would use the facilities. The 0.13 and 0.198 figures used to calculate physicians and nurses costs take into account the extra time spent on a delivery. (twice the normal time for a physician and three times the time for a nurse)

10. Post Natal Care
6 visits are recommended with an adjustment down to five (vaccination) visits per delivery and a coverage objective of 60% to be consistent with the objectives used for normal delivery

11. Communicable Diseases

11.1 Tuberculosis
The prevalence estimate is 3%. For each new case it was estimated that four additional members of the family would be screened and that each person would be viewed two times. The coverage objective is 80%.

Treatment is provided in special facilities and is not included in the cost of the BBP. Assumptions for visits by physicians and nurses are as follows: The physician is expected to see the patient twice and the members of his family once for early detection of the disease. The nurse will see the members of the family in the follow up visit for health education and will only refer them to the physician in case of positive lab tests for TB. The ratio of physician visits to nurse visits is 6:4 per new TB case.

11.3 Schistosomiasis
The prevalence for Alexandria is relatively low compared to the national figure. We used 1% of the entire adult population. 3 yearly visits per case and 80% coverage. Each visit is by a physician and a laboratory technician.

11.4 Urinary Tract Infection
In the absence of sound source about the incidence, the figure selected here is 5%, which takes into account anecdotal information about the problem, especially in rural areas and lower income groups.

Each episode requires two visits. Each visit requires a physician. Half of the visits require a lab technician. 80% coverage rate.

11.5 Sexually Transmitted Diseases
The incidence rate is 1%. The coverage objective is 60% with 2 visits per patient. A physician sees each patient.

12. Diabetes (Chronic, uncomplicated)
4% of the population over 25. Requiring 4 yearly visits with a 60% coverage objective. A physician and a lab technician see each patient.

13. Hypertension
The prevalence is 30% over 25 years of age. Each patient is seen twice a year and the coverage objective is 60%. All visits are to a physician. Half require a lab technician.

14. Fever (simple measures): this means fever of unknown origin for which a diagnosis cannot be proposed at the unit level and that requires only symptomatic treatment such as paracetamol. 5% of incidence in the population over 5. 2 visits per episode and 80% coverage. All visits require a physician.

16. First Aid for Acute Conditions
5% of all population. 2 visits per year. 80% coverage and all visits require a physician and a nurse.

17. Conjunctivitis
1% incidence among children over 5. 2 visits per episode and 80% coverage. Physician only.

3.4 Cost of Drugs and Diagnostic Tests (Sheets Two and Five)

For the purpose of costing the BBP, drugs are the only treatment and a defined list of clinical laboratory tests is the only investigations (diagnostic tests) which are included. The choice of what drugs and tests to use and when to use them is reflected in the Treatment Protocols (see Annex) and the BBP assumptions discussed in Section 3.3. Sheet 2 calculates the cost of drugs and investigations (diagnostic tests) for BBP services and conditions, presented as a total per service and per intervention. Supporting the calculations in Sheet 2 is Sheet 5, which contains the pricing and utilization data for all the drugs and lab tests. Sheet 5 is entitled “Normative costs based on standardized treatment protocols” since the amount, timing, and frequency of drugs and lab tests used is based on what “should” happen as described in the Treatment Protocols.

The basis for estimating treatment and diagnostic costs was the standard guidelines and protocols collected from different programs. When program data was not available, for example in the case of many adult health conditions, a panel of experts provided recommendations about standard treatments and tests. When different options were available for the same condition, we selected the drugs included in the essential drug list and an average estimate of their cost was calculated based on the prevalence of each presentation in the same disease. For example, cost of treatment of ARI is the average cost of treatment of: sore throat (42 percent), non-pneumonia cough or wheezes (49 percent), pneumonia (5 percent), ear problems (2.8 percent), and severe disease (0.16 percent).

For chronic conditions such as like diabetes and hypertension, it was assumed that 20 percent of the patients would require an alternative treatment equal to three times the cost of the standard treatment.

Cost of treatment is calculated per episode. In vaccination and chronic diseases it is calculated per year. The same procedures were followed for the cost of clinical laboratory services. X-rays and other non-lab investigations such as ECG, ultrasounds, etc. are not included since these will be supplied at the FHC or hospital levels and their cost is reflected in the 40 percent estimate used to represent the incremental costs of referring patients to the FHC and hospitals.

3.5 Cost of Manpower for BBP (Sheet Three)

Sheet Three takes the number of BBP contacts for each type of personnel (physician, nurse, or technician) calculated by Sheet One, and calculates the cost of personnel based on assumptions about salary and productivity. The annual salary for a full time physician will be 22,680 L.E. This is based upon a patient load of 20 per day during six days a week during 35 weeks. Nurse and technicians would also attend 20 patients per day and the annual salary will be 7,560 L.E. The annual salary also includes 26 percent benefits to ensure consistency with the Civil Service rules. A national provider survey was conducted that examined patterns of job holding and total income of providers in Egypt (see A.K. Nandakumar, P. Berman, and E. Fleming. 1999. *Findings of the Egyptian Health Care Provider Survey*. Bethesda, Technical Report No. 26. MD: PHR). For purposes of this exercise it was assumed that physicians would not be allowed to hold multiple jobs and they would work full-term delivering services contained in the BBP. It was therefore necessary to adjust upward current government salaries. The extent of adjustment was based upon the findings of the national survey referred to earlier. Salaries of nurses were also revised upwards.

3.6 Summary of Cost of BBP (Sheet Four)

All of the cost inputs and calculations are summarized in the cost of the BBP in Sheet 4. Column data presents the manpower costs by type of provider (physician, nurse, technician) calculated by sheets 1 and 3; and drug and lab test costs as calculated by sheets 2 and 5. Manpower, drug, and diagnostic costs totaled 92,853,312 L.E. Sheet 4 also contains the assumptions regarding the cost of overhead, non-BBP services, and referrals for FHC and inpatient care. Preliminary assumptions were made to estimate these costs until actual data is available from the pilot test. The cost estimates are expressed as percentages of the base cost of manpower, drugs and diagnostic services.

Overhead costs refer to items like rent, equipment, administrative staff and materials. Overhead was assumed to represent about 20 percent of the base cost or 18,570,662 L.E. (20% x 92,853,312 L.E.). The cost of non-BBP services is an estimate of the cost of providing medical services not covered by the BBP but are likely to be demanded by FHU users. The cost of providing non-BBP services was estimated to be 15 percent of the base cost or 13,927,997 L.E. Finally, it was estimated that the cost of referring patients for services provided by the upper level of the three-tier delivery system – the Family Health Units, the Family Health Centers and the hospitals – would represent 40 percent of the base cost or 37,141,325 L.E. Sheet 4 also contains the assumption about inflation to project the cost of the BBP into future years.

The total cost of the BBP was estimated to be approximately 162,493,296 L.E. or 48 L.E. per capita for one year for the target population defined for the governorate of Alexandria. The total BBP cost is broken-down graphically (bar and pie charts) to show the distribution by cost categories.

3.7 Spreadsheets

The BBP spreadsheets are presented below.

Contacts for BBP – Sheet 1

	1	2	3	4	5	6	7	8	9	10	11	12
No.	**Service**	**Target population***	**No. of target pop.***	**Prevalence rate***	**Incidence rate**	**# of episodes/ target pop./ year**	**# of episodes that need FBC**	**Expected contacts/ episode that need FBC**	**# of contacts / year**	**# of visits adjusted to multiple services /contact**	**coverage objective %**	**No. of expected contact/ indiv. In the target pop.**
	Child Health Services (0-5 years)											
1	Immunization											
	First Year of life	0-1yr	108,301	0.00	1.00	5	5	1	5	5	0.96	4.80
	Second year of life	1-2yr	108,301	0.00	1.00	1	1	1	1	1	0.96	0.96
	Sixth year	6-7yr	92,732	0.00	1.00	1	1	1	1	1	0.96	0.96
	Ninth year	9-10yr	92,732	0.00	1.00	1	1	1	1	1	0.96	0.96
3	Vit A Supplementation											
	First Year of life	0-1yr	108,301	0.00	1.00	1	1	1	1	0	0.96	0.00
	Second year of life	1-2yr	108,301	0.00	1.00	1	1	1	1	0	0.96	0.00
4	Iron Supplementation											
2	Growth Monitoring											
	First Year of life	0-1yr	108,301	0.00	1.00	5	5	1	5	0	0.15	0.00
	Second year of life	1-2yr	108,301	0.00	1.00	2	2	1	2	1	0.15	0.15
	Third year	2-3yr	108,301	0.00	1.00	1	1	1	1	1	0.15	0.15
	fourth year	3-4yr	108,301	0.00	1.00	1	1	1	1	1	0.15	0.15
	Fifth year	4-5yr	108,301	0.00	1.00	1	1	1	1	1	0.15	0.15
5	IMCI											
5.1	Diarrheal Diseases	0-5yr	433,202	0.00	1.00	3	1.5	2	3	3	0.80	2.40
5.2	Acute Respiratory Disease	0-5yr	433,202	0.00	1.00	5	4	2	8	8	0.80	6.40
6	Rheumatic Heart Disease											
	Chronic Compensated RHD	5-20yr	1,299,607	0.00	0.00	1	1	2	2	2	0.50	0.00

Target Population: Population at risk
No of Target Pop.: CAPMAS data for Alexandria Governorate
Episode: No. of intended interventions
FBC: Facility based care
Incidence of diarrhea and ARI: existence of the problem not incidence

Contacts for BBP – Sheet 1

	1	2	3	4	5	6	7	8	9	10	11	12
No.	**Service**	**Target population ***	**No. of target pop.***	**Prevalence rate***	**Incidence rate**	**# of episodes/ target pop./ year**	**# of episodes that need FBC**	**Expected contacts/ episode that need FBC**	**# of contacts / year**	**# of visits adjusted to multiple services/ contact**	**coverage objective %**	**No. of expected contact/ indv. In the target pop.**
	Maternal Health Services											
7	**Family Planning**											
	IUD insertion	Married women 15-49yr	1,191,305	0.86	0.00	1	1	1	1	1	0.70	0.60
	Contraceptive Pills	Married women 15-49yr	1,191,305	0.13	0.00	1	1	1	1	1	0.70	0.09
8	**Antenatal Care**	Married women 15-49yr	1,191,305	0.00	0.11	5	5	5	5	5	0.80	0.44
9	**Normal Delivery(clinic)**	Married women 15-49yr	1,191,305	0.00	0.11	1	1	1	1	1	0.60	0.07
10	**Post natal care**	Married women 15-49yr	1,191,305	0.00	0.11	6	6	1	6	5	0.60	0.33
	Health Services for all age groups											
11	**Communicable Diseases**											
11.1	**TB**	0-5yr & 15yr +	2,085,324	0.03	0.00	1	5	2	10	10	0.80	0.26
11.3	**Shistosomiasis**	5yr+	2,951,189	0.01	0.00	1	1	3	3	3	0.80	0.02
11.4	**Urinary Tract Infection**	5yr+	2,951,189	0.00	0.05	1	1	2	2	2	0.80	0.08
11.5	**Sexually Transmitted Diseases**	20yr+	1,651,582	0.00	0.01	1	1	2	2	2	0.60	0.01

Contacts for BBP – Sheet 1

	1	2	3	4	5	6	7	8	9	10	11	12
No.	**Service**	**Target population ***	**No. of target pop.***	**Prevalence rate***	**Incidence rate**	**# of episodes/ target pop./ year**	**# of episodes that need FBC**	**Expected contacts/ episode that need FBC**	**# of contacts / year**	**# of visits adjusted to multiple services/ contact**	**coverage objective %**	**No. of expected contact/ indv. In the target pop.**
12	**Diabetes**											
12.1	Chronic uncomplicated Diabetes	25yr+	1,380,831	0.04	0.00	1	1	4	4	4	0.60	0.10
13	**Hypertension**	25yr+	1,380,831	0.30	0.00	1	1	2	2	2	0.60	0.36
14	**Fever (Simple Measures)**	5yr+	2,951,189	0.00	0.05	1	1	2	2	2	0.80	0.08
16	**First Aid for Acute Conditions**	all age gr.	3,384,391	0.00	0.05	1	1	1	1	1	0.80	0.04
17	**Conjunctivitis**	5-15yr	1,299,607	0.00	0.01	1	1	2	2	2	0.80	0.01
	Total											

Target Population: Population at risk
No of target Pop.: CAPMAS data for Alexandria Governorate
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FBC: Facility based care
Incidence of diarrhea and ARI: existence of the problem not incidence

Contacts for BBP – Sheet 1

	1	13	14	15	16	17	18	19
No.	**Service**	**No. of expected contact**	**No. of contact by Phys.**	**No. of contact by Nurse**	**No. of contact by lab tech.**	**Total No. Of Phys. Contact**	**Total # of Nurse Contact**	**Total # of tech. Contact**
	Child Health Services (0-5 years)							
1	**Immunization**							
	First Year of life	519,842.40	0.96	4.8		103,968.48	519,842.40	0.00
	Second year of life	103,968.48	0.00	0.96		0.00	103,968.48	0.00
	Sixth year	89,022.72	0.00	0.96		0.00	89,022.72	0.00
	Ninth year	89,022.72	0.00	0.96		0.00	89,022.72	0.00
3	**Vit A Supplementation**							0.00
	First Year of life	0.00	0.00	0		0.00	0.00	0.00
	Second year of life	0.00	0.00	0		0.00	0.00	0.00
4	**Iron Supplementation**							0.00
2	**Growth Monitoring**							0.00
	First Year of life	0.00	0.00	0		0.00	0.00	0.00
	Second year of life	16,245.08	0.15	0.15		16,245.08	16,245.08	0.00
	Third year	16,245.08	0.15	0.15		16,245.08	16,245.08	0.00
	fourth year	16,245.08	0.15	0.15		16,245.08	16,245.08	0.00
	Fifth year	16,245.08	0.15	0.15		16,245.08	16,245.08	0.00
5	**IMCI**							0.00
5.1	**Diarrheal Diseases**	1,039,684.80		1.2		1,039,684.80	519,842.40	0.00
5.2	**Acute Respiratory Disease**	2,772,492.80		1.28		2,772,492.80	554,498.56	0.00
6	**Rheumatic Heart Disease**							0.00
	Chronic Compensated RHD	2,599.21		0		2,599.21	0.00	0.00

Target Population: Population at risk
No of target Pop.: CAPMAS data for Alexandria Governorate
Episode: No. of intended interventions
FBC: Facility based care
Incidence of diarrhea and ARI: existence of the problem not incidence

Contacts for BBP – Sheet 1

	1	13	14	15	16	17	18	19
No.	**Service**	**No. of expected contact**	**No. of contact by Phys.**	**No. of contact by Nurse**	**No. of contact by lab tech.**	**Total No. Of Phys. Contact**	**Total # of Nurse Contact**	**Total # of tech. Contact**
	Maternal Health Services							
7	**Family Planning**							0.00
	IUD insertion	717,165.61		0.60		717,165.61	717,165.61	0.00
	Contraceptive Pills	108,408.76		0		108,408.76	0.00	0.00
8	**Antenatal Care**	524,174.20		0.44	0.09	524,174.20	524,174.20	104,834.84
9	**Normal Delivery(clinic)**	78,626.13		0.198		157,252.26	235,878.39	0.00
10	**Post natal care**	393,130.65		1.32		78,626.13	1,572,522.60	0.00
	Health Services for all age groups							0.00
11	**Communicable Diseases**							0.00
11.1	**TB**	550,525.54		0.11		330,315.32	220,210.21	0.00
11.3	**Shistosomiasis**	70,828.54		0	0.02	70,828.54	0.00	70,828.54
11.4	**Urinary Tract Infection**	236,095.12		0	0.04	236,095.12	0.00	118,047.56
11.5	**Sexually Transmitted Diseases**	9,909.49		0	0.00	9,909.49	0.00	4,954.75
12	**Diabetes**			0		0.00	0.00	0.00
12.1	chronic uncomplicated Diabetes	142,501.76		0	0.10	142,501.76	0.00	142,501.76
13	**Hypertension**	497,099.16		0	0.18	497,099.16	0.00	248,549.58
14	**Fever (Simple Measures)**	236,095.12		0		236,095.12	0.00	0.00
16	**First Aid for Acute Conditions**	135,375.64		0.04		135,375.64	135,375.64	0.00
17	**Conjunctivitis**	10,396.86		0		10,396.86	0.00	0.00
	Total	8,391,946.00				7,237,969.55	5,346,504.23	689,717.02

Target Population: Population at risk
No of target Pop.: CAPMAS data for Alexandria Governorate
Episode: No. of intended interventions
FBC: Facility based care
Incidence of diarrhea and ARI: existence of the problem not incidence

Cost of Drugs and Investigations for FHU Services BBP – Sheet 2

No.	Service	No. of Target Pop.*	Expected Contact/target pop.	# of episodes that need FBC	cost of drugs/ intervention/ year	cost of inv./ intervention /year	Total Cost of drugs/target pop.	Total Cost of inv./target pop.
	Child Health Services (0-5 years)							
1	**Immunization**							
	First Year of life	108,301	519,842	5	4.74		2,461,454	0
	Second year of life	108,301	103,968	1	1.13		116,965	0
	Sixth year	92,732	89,023	1	0.63		55,639	0
	Ninth year	92,732	89,023	1	0.63		55,639	0
3	**Vit A Supplementation**							
	First Year of life	108,301	108,301	1	0.16		16,115	0
	Second year of life	108,301	108,301	1	0.31		32,230	0
4	**Iron Supplementation**							
2	**Growth Monitoring**							
	First Year of life	108,301	541,503	5	0.00		0	0
	Second year of life	108,301	16,245	2	0.00		0	0
	Third year	108,301	16,245	1	0.00		0	0
	fourth year	108,301	16,245	1	0.00		0	0
	Fifth year	108,301	16,245	1	0.00		0	0
5	**IMCI**							
5.1	**Diarrheal Diseases**	433,202	1,039,685	1.5	2.17		1,129,098	0
5.2	**Acute Respiratory Disease**	433,202	2,772,493	4	1.59		2,209,344	0
6	**Rheumatic Heart Disease**							
	Chronic Compensated RHD	1,299,607	2,599	1	9.00		11,696	0

Target Population: Population at risk
Episode: No. of intended interventions
N.B.: Contact for Vit A suppl.. and growth monit. (1st yr) are not an actual contact, same for immunization

Cost of Manpower for BBP – Sheet 2

No.	Service	No. of Target Pop.*	Expected Contact/target pop.	# of episodes that need FBC	cost of drugs/ interventio n/year	cost of inv./ intervention /year	Total Cost of drugs/target pop.	Total Cost of inv./target pop.
	Maternal Health Services							
7	**Family Planning**							
	IUD insertion	1,191,305	717,166	1	1.00		717,166	0
	Contraceptive Pills	1,191,305	108,409	1	7.02		761,029	0
8	**Antenatal Care**	1,191,305	524,174	5		44.00	0	4,612,733
9	**Normal Delivery(clinic)**	1,191,305	78,626	1	26.98		2,121,333	0
10	**Post natal care**	1,191,305	393,131	6	0.00		0	0
	Health Services for all age groups							
11	**Communicable Diseases**							
11.1	***TB***	2,085,324	550,526	5	0.00	18.50	0	5,092,361
11.3	***Shistosomiasis***	2,951,189	70,829	1	8.50	4.00	200,681	94,438
11.4	**Urinary Tract Infection**	2,951,189	236,095	1	9.45	2.5	1,115,839	295,119
11.5	**Sexually Transmitted Diseases**	1,651,582	9,909	1	1.52	8.80	7,554	43,577
12	**Diabetes**							
12.1	chronic uncomplicated Diabetes	1,380,831	142,502	1	62.64	96.00	2,231,578	3,420,042
13	**Hypertension**	1,380,831	497,099	1	45.12	19.00	11,214,557	4,722,442
14	**Fever (Simple Measures)**	2,951,189	236,095	1	0.42		49,580	0
16	**First Aid for Acute Conditions**	3,384,391	135,376	1	0.76		102,393	0
17	**Conjunctivitis**	1,299,607	10,397	1	2.40		12,476	0
	Total						24,622,365	18,280,712

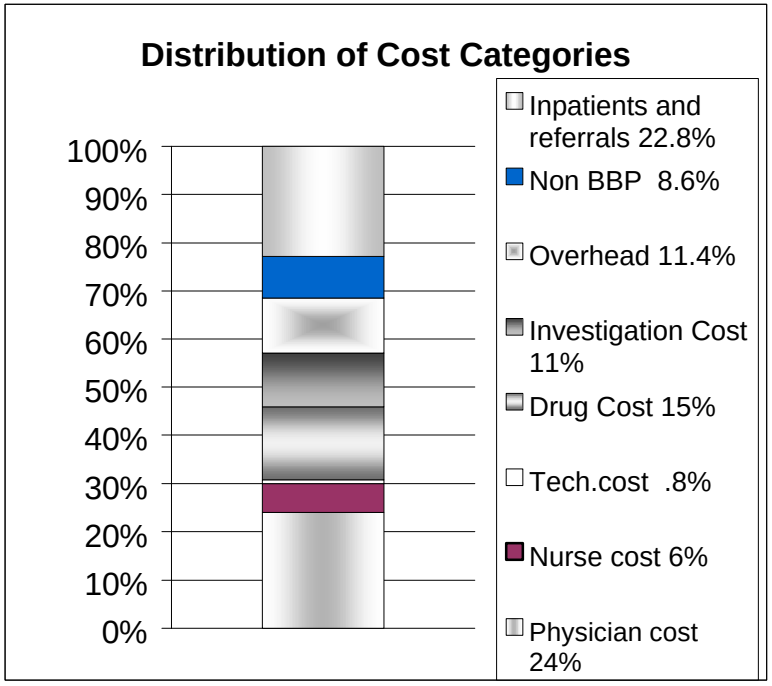
Target Population: Population at risk
Episode: No. of intended interventions
N.B.: Contact for Vit A suppl.. and growth monit. (1st yr) are not an actual contact, same for immunization

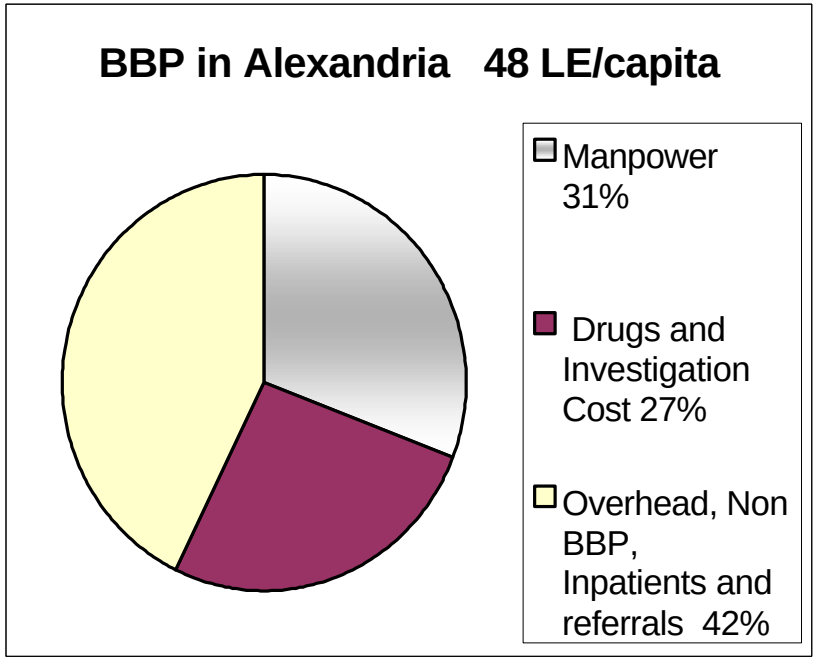
Cost of Manpower for BBP – Sheet 3 Recap

Total # of contacts for BBP Interventions by Phys./Year	Annual Salary/ physician L.E.	# of patient contacts/ physician/ year	Physician cost/ patient L.E.	Physician cost L.E.	Total # of contact for BBP Interventions by Nurse/year	Annual Salary / Nurse L.E.	# of patient contacts/ Nurse/ year	Nurse cost/ patient L.E.	Nurse cost	Total # of contact for BBP Interventions by tech./year	Annual Salary/ tech. L.E.	# of patient contacts/ tech./year	tech. cost/ patient L.E.	Tech. cost
7,237,970	22680	4200	5.4	39,085,036	5,346,504	7560	4200	1.80	9,623,708	689,717.02	7560	4200	1.80	1,241,491

Summary of cost of BBP for Family Health Unit Services – Sheet 4

Manpower (L.E.)			Drugs and Investigation Cost (L.E.)		Overhead (20%)	Non BBP (15%)	Inpatients and referrals (40%)	Total Population	Total cost/capita L.E.
Physician cost	Nurse cost	Tech.cost	Drug Cost	Investigation Cost					
39,085,036	9,623,708	1,241,491	24,622,365	18,280,712	18,570,662	13,927,997	37,141,325	3,384,391	48.01





Normative Cost Based on Standardized Treatment Protocols – Sheet 5

No.	Service	Age	Drug	Price/ Unit	Total Price/ Episode	Lab Tests	No of Tests/ Episode	cost of the test	Total Cost of Lab	Total Cost of Drugs	Total Cost	Notes
	Child Health											
1	Immunization				23.68					23.68	23.68	1st yr
	BCG	1-3mn		1.1	1.10					1.13	1.13	2nd yr
	OPV	2,4,6,9,18mn		0.5	2.00					0.63	0.63	6th yr
	DPT	2,4,6,18mn		0.63	1.88					0.63	0.63	9thyr
	Measles	9mn		2.2	2.20							
	Hepatitis B	2,4,6mn		5.5	16.50							
2	Growth Monitoring											
3	Vit A Supplementation	9 months	vit A cap 100.000 IU	1.55	0.16					0.16	0.16	1st yr
		18-24 mn	vit A cap 200.000 IU	1.55	0.31					0.31	0.31	2nd yr
4	Iron Supplementation											
5	Diarrheal Diseases									2.17	2.17	episode
5.1	No dehydration (73.6%)	0-2years	ORS	0.13	1.50					2.00	2.00	
		2y and +	ORS	0.13	2.50							
5.2	Some Dehydration (21.7%)		ORS	0.13	0.13					2.13	2.13	episode
	PLUS: Maintenance	0-2years	ORS	0.13	1.50							
		2y and +	ORS	0.13	2.50							
5.3	Severe dehydration (2.7%)		parental rehydran sol	2	2.00					4.13	4.13	episode
	PLUS		ORS	0.13	0.13							
	Alternative treatment:		ORS	0.13	0.13							
	PLUS: Maintenance	0-1y	ORS	0.13	1.50							
		1y and +	ORS	0.13	2.50							
5.4	Bloody stool (dysentery) (1.1%)		Trimethoprim /Sulphamethoxazol	2.2	2.20					3.05	3.05	episode
	If no improv. in 2 days		Nalidixic acid	3.9	3.90							
	If no improv. in another 2 days+trophozoites in stools		refer to hospital									
5.5	Persistent diarrhea (more than 14 days) (0.1%)	0-1y	ORS	0.13	1.50					2.00	2.00	episode
		1 y and +	ORS	0.13	2.50							

Normative Cost Based on Standardized Treatment Protocols – Sheet 5

No.	Service	Age	Drug	Price/ Unit	Total Price/ Episode	Lab Tests	No of Tests/ Episode	cost of the test	Total Cost of Lab	Total Cost of Drugs	Total Cost	Notes
			refer to the hospital									
5.6	Severe Malnutrition		ORS and refer	0.13	0.13					0.13	0.13	episode
5.7	Fever	0-2 months	No treatment, refer							1.20	1.20	episode
		more than 2 months	paracetamol	1.2	1.20							
6	Acute Respiratory Disease									1.59	1.59	episode
6.1	Cough or Difficult Breathing											
6.1.1	Very severe disease (0.16%)	0-2 months	Gentamycin 40 mg vial	0.46	0.23					1.45	1.45	episode
			Benzyl Penicillin 1.00.000 units vial	0.75	0.75							
	If wheezing (5%)		Salbutamol nebulizer	4.75								
		2months-5 years	Chloramphenicol 1000 mg vial	0.95	0.95							
6.1.2	Severe Pneumonia (0.6%)		referred							0.00	0.00	episode
6.1.3	Pneumonia (5%)	0-1 month	Amoxycillin 250 mg suspension (60ml yr)	3.45	3.45					3.53	3.53	episode
		1-2 mn	Amoxycillin 250 mg suspension (60ml syr)	3.45	3.45							
		2-12 months	Amoxycillin 250 mg suspension (60ml syr)	3.45	3.45							
		12mn-5y	Amoxycillin 250 mg suspension (60ml syr)	3.45	3.45							
	If wheezing (5%)	2-12 mn	Salbutamol oral	1.6	1.60							
		12 mn-5y	Salbutamol oral	1.6	1.60							
6.1.4	No pneumonia, cough or cold (49%)		no medications; safe cough remedy							0.00	0.00	episode
6.2	Ear problems (2.8%)											
6.2.1	Mastoiditis	0-2mn	Gentamycin 40 mg vial	0.46	0.23					2.16	2.16	episode

Normative Cost Based on Standardized Treatment Protocols – Sheet 5

No.	Service	Age	Drug	Price/ Unit	Total Price/ Episode	Lab Tests	No of Tests/ Episode	cost of the test	Total Cost of Lab	Total Cost of Drugs	Total Cost	Notes
			Benzyl Penicillin 1.00.000 units vial	0.75	0.75							
		2months-5 years	Chloramphenicol 1000 mg vial	0.95	0.95							
			Paracetamol(80 ml)	1.2	1.20							
			refer									
6.2.2	Acute ear infection	0-1 month	Amoxycillin 250 mg suspension (60ml syr)	3.45	3.45					4.65	4.65	episode
		1-2 mn	Amoxycillin 250 mg suspension (60ml syr)	3.45	3.45							
		2-12 months	Amoxycillin 250 mg suspension (60ml syr)	3.45	3.45							
		12mn-5y	Amoxycillin 250 mg suspension (60ml syr)	3.45	3.45							
			Paracetamol(80 ml)	1.2	1.20							
6.2.3	Chronic ear infection		refer to ENT special.							0.00	0.00	episode
6.3	Sore throat (42%)											
6.3.1	Throat abscess	0-2mn	Gentamycin 40 mg vial	0.46	0.23					0.96	0.96	episode
			Benzyl Penicillin 1.00.000 units vial	0.75	0.75							
		2mos.-5 yrs	Chloramphenicol 1000 mg vial	0.95	0.95							
6.3.2	Streptococal sore throat	0-5y	Benzyl Penicillin 600.000 units vial	0.75	0.75					1.95	1.95	episode
			Paracetamol	1.2	1.20							
7	Rheumatic Heart Disease											
	Acute Compensated RHD		refer to specialist			ESR		2	9.50		9.50	episode
						ASOT		5				
						TLC		2.5				

Normative Cost Based on Standardized Treatment Protocols – Sheet 5

No.	Service	Age	Drug	Price/ Unit	Total Price/ Episode	Lab Tests	No of Tests/ Episode	cost of the test	Total Cost of Lab	Total Cost of Drugs	Total Cost	Notes
	Chronic Compensated RHD		long acting penicillin	0.75	0.75					9.00	9.00	year
8	Communicable Diseases											
	Measles		paracetamol	1.2	1.20					3.30	3.30	episode
			gentian violet	1.75	1.75							
	10%		Amoxycillin 250 mg suspension (60ml syr)	3.45	3.45							
	Mumps		paracetamol	1.2	1.20					1.55	1.55	episode
	10%		Amoxycillin 250 mg suspension (60ml syr)	3.45	3.45							
	Chicken Pox		paracetamol	1.2	1.20					3.30	3.30	episode
			gentian violet	1.75	1.75							
	10%		Amoxycillin 250 mg suspension (60ml syr)	3.45	3.45							
9	Parasitic Diseases											
9.1	Shistosomiasis		praziquantel syrup	5	5.00	stool analysis	4	4	16.00	5.00	21.00	Episode
9.2	Helminthiasis		Mebendazole	0.85	0.85	stool analysis	4	2	8.00	0.85	8.85	Episode
9.2.1	Teaniasis		Niclosimide	3.5	3.50	stool analysis	2	2	4.00	3.50	7.50	episode
9.3.1	Protozoal diseases		Metronidazole syrup	2.9	2.90	stool analysis	2	2	4.00	2.25	6.25	episode
			Metronidazole tab	1.6	1.60							
	Maternal Health											
10	Family Planning											
	IUD insertion		CU-T 180	2	2.00					2.00	2.00	2 yr
	Contraceptive Pills		microvlar	0.59	0.59					7.02	7.02	year
	Norplant inj.											
	Condom		condom									
11	Antenatal Care								44.00	?	44.00	episode
	Clinical Follow up visits											
	Drug Supplementation???		???		???							
	Lab examination											
						urine analysis	4	2.5	10.00			

Normative Cost Based on Standardized Treatment Protocols – Sheet 5

No.	Service	Age	Drug	Price/ Unit	Total Price/ Episode	Lab Tests	No of Tests/ Episode	cost of the test	Total Cost of Lab	Total Cost of Drugs	Total Cost	Notes
						blood grouping	1	2.5	2.50			
						RH factor	1	3	3.00			
						Hb %	1	1.5	1.50			
	Ultrasonography					Ultrasonography	1		25.00			
12	Tetanus Toxoid injection Normal Delivery			3.75	7.50 26.98	F.B.S.	1	2	2.00	26.98	26.98	episode
			glucose 5%	1.9	1.90							
			syntocinon amp.	0.5	0.50							
			methergin amp.									
			cannula	4.5	4.50							
			IV line	1.5	1.50							
			cat gut amp.	5	5.00							
			zylocaine vial	7	1.40							
			betadin	4	0.20							
			syringe 5cc	0.23	0.46							
			syringe2cc	0.22	0.22							
			cotton	12	1.20							
			examination gloves	0.1	1.20							
			sterile gloves	1.6	3.20							
			gauze	0.5	1.50							
			methargin tab	2.7	2.70							
			prophylactic antibiotic		0.00							
			dressing	0.5	1.50							
13	Post natal care											
	clinical follow up											
	Adult Health											
14	Communicable Diseases											
14.1	TB		follow up treatment					18.5				
14.2	Hepatitis											

Normative Cost Based on Standardized Treatment Protocols – Sheet 5

No.	Service	Age	Drug	Price/ Unit	Total Price/ Episode	Lab Tests	No of Tests/ Episode	cost of the test	Total Cost of Lab	Total Cost of Drugs	Total Cost	Notes
	Hepatitis A Virus		Non specific treatment									
			Tonics			SGOT						
			Diet rich incarbohydrate									
			Rest			Viral markers						
						Ultrasonography						
	Non hepatitis A Viruses		Referral to hospital									
14.3	Shistosomiasis								16.00	8.50	24.50	episode
			praziquantel	8.5	8.50	urine and stool analysis	4	4	16.00			
15	Urinary Tract Infection				9.45				2.5	9.45	11.95	episode
			Co-trimoxazole or	1.45	8.70	1] Urine analysis	1	2.5	2.50			
			amoxycillin 250 mg cap	2.7	2.70	2]prostatic discharge exam	1	2.5	2.50			
	In severe cases 10%		amoxycillin 250 mg I.V.	2.25	36.00	Vaginal discharge exam	1	2.5	2.50			
			followed by amoxycillin 250 mg cap	2.7	2.70							
16	Sexually Transmitted Diseases				1.52				8.80	1.52	10.32	episode
16.1	Urethritis (gonococcal) 30%					gram stain smear	1	5.5	5.50			
			sulfamethoxazole 400mg / trimethoprim 80mg	1.45	2.90	RPR	1	8.5	8.50			
16.2	Urethritis (Non gonococcal) 26%					gram stain smear	1	5.5	5.50			
			OR/ Tetracyclin 250 mg cap	0.35	0.70	RPR	1	8.5	8.50			

Normative Cost Based on Standardized Treatment Protocols – Sheet 5

No.	Service	Age	Drug	Price/ Unit	Total Price/ Episode	Lab Tests	No of Tests/ Episode	cost of the test	Total Cost of Lab	Total Cost of Drugs	Total Cost	Notes
			OR/ Erthromycin 250 mg tab.	2.95	2.95							
16.3	genital warts 17%		refer to specialist									
16.4	Syphilis 8%					RPR	1	8.5	8.50			
	Early		benzathine benzylpenicillin 1.2 milion iu.	0.75	1.50	TPHA	1	15	15.00			
16.5	Candidiasis (vaginal)5%		Clotrimazole	1.2	1.20	Fungus examination	1	5.5	5.50			
16.6	Genital scabies 4%		refer to specialist									
17	Diabetes											
17.1	chronic uncomplicated Diabetes				3.26	yearly :			24.00	39.15	63.15	year
			# Oral Hypoglycemics			1- F.B.G.	4	2	8.00			
			1)Glibenclamide	1.25	4.69	2- P.P.B.G.	4	2	8.00			
			2)Metformin 500 mg	0.55	2.48	urine analysis	4	2	8.00			
			# Insulin	0.75	2.63							
18	Hypertension				2.35	Chest x- ray	1	8	19.00	28.20	47.20	year
			1) fruzemide 40 mg tab or	1.4	2.10	ECG	1	5				
			1) Propranolol 40 mg tab	3.3	2.48	Serum creatinine	1	4				
						Blood urea	1	2				
19	Fever (Simple Measures)									0.42	0.42	episode
			paracetamol	0.7	0.42							
19	Chronic pain (simple measures)									1.87	1.87	episode
			Analgesics									
			acetyl salicylic acid	1	1.00							
			paracetamol	0.7	1.40							
			ibuprofen	1.6	3.20							
20	First Aid for Acute Conditions									0.76	0.76	episode
	Convulsions		diazepam	0.37	0.37							

Normative Cost Based on Standardized Treatment Protocols – Sheet 5

No.	Service	Age	Drug	Price/ Unit	Total Price/ Episode	Lab Tests	No of Tests/ Episode	cost of the test	Total Cost of Lab	Total Cost of Drugs	Total Cost	Notes
			phenobarbital	0.13	0.13							
	Shock		dextrane 70	1.9	1.90							
	Hemorrhage		dextrane 70	1.9	1.90							
	Snake bite		anti-venom serum									
	Scorpion bite		anti-scorbion serum									
	Epistaxis		atropine sulfate	0.2	0.20							
			anterior nasal pack									
	Acute renal colic		atropine sulfate	0.2	0.20							
			spasmocin	0.4	0.40							
	Minor Burns		Analgesics for pain									
			acetyl salicylic acid	0.02	0.12							
			paracetamol	0.7	0.70							
	SUPERFICIAL WOUNDS											
			lidocaine 2% S.C.	0.4	0.40							
			chlorhexadine 0.5%	2	2.00							
21	Conjunctivitis									2.40	2.40	episode
	Simple Bacterial		Oxytetracycline 1%+ Polymyxin	0.75	0.75							
	Allergic		Sod.cromoglycate 2%	2.55	2.55							
			PRIZOLINE	1.5	1.50							
22	Dental Care											
	1] Tooth Extraction		Antibiotics									
	non-surgical		1]ampicillin	4.7	7.05	carried out for patients having systemic diseases as :						
			2]amoxycillin	4.5	6.75	1] prothrombin time	1.00	2.5	2.50			
			3]fluxacillin	5.6	8.40	2]prothrombin ratio	1.00	2.5	2.50			
			Analgesics			3]clotting time	1.00	1.5	1.50			

Normative Cost Based on Standardized Treatment Protocols – Sheet 5

No.	Service	Age	Drug	Price/ Unit	Total Price/ Episode	Lab Tests	No of Tests/ Episode	cost of the test	Total Cost of Lab	Total Cost of Drugs	Total Cost	Notes
			1]paracetamol	0.7	0.70	4]bleeding time	1.00	1.5	1.50			
			2]ketoprofen .	2	3.00							
			Mouth wash									
			1]hexetidine	2.5	2.50							
			3]cetrimide	1.3	1.30							
			Anesthesia									
			1]mepicaine hydrochloride									
			2]lidocaine	0.26	0.26							
			3]surface anesthesia									
	2]periodontal diseases											
	Marginal		1]Antibiotics									
	Juvenile		a]tetracyclin	1.15	2.30							
	per abscess		b]ampicillin	4.7	4.70							
			2]metronidazol .	4	3.00							
			3]paracetmol	0.7	0.70							
			4]ketoprofen	2	3.00							
			5]mouth wash	1.3	1.30							
	3]gingival diseases											
			1]Antibiotics									
			2]Analgesics									
			3]mouth wash									
	4]dental filling											
			Anesthesia									
			Analgesics									

Annex. Treatment Protocols Used in Costing of the Basic Benefits Package

National Immunization Schedule

Source: The Expanded Program on Immunization in Egypt.

BCG:	before 3 months of age
OPV (first dose):	2nd month of age
OPV (second dose):	4th month of age
OPV (Third dose):	6th month of age
OPV (fourth dose):	9th month of age
OPV Booster dose:	18-24 months of age
DPT (first dose):	2nd month of age
DPT (second dose):	4th month of age
DPT (Third dose):	6th month of age
DPT Booster dose:	18-24 months of age
DT Booster dose:	6 and 9 years of age
HB (first dose):	2nd month of age
HB (second dose):	4th month of age
HB (Third dose):	6th month of age
Measles:	9th month of age

GROWTH MONITORING

Source: Consultation with: Dr. Hosni Tamam, Former Director, Primary Health Care Department, Technical Coordinator, Technical Support Office, MOHP and Dr. Laila Kamel, Head of Public Health Department, Cairo University.

Growth monitoring should be done for children 0-59 months of age as follows:

First year of life: during the visit for immunization
Second year of life: every 6 months
Third and fourth years of life: every year

Community health worker or Nurse can do this.

DIARRHEAL DISEASES

Source: Vertical program and WHO guidelines for Diarrheal diseases**.**
Consultation with: Dr. Said Madkour, Executive director, CDD program

Treatment of diarrheal disease depends on degree of dehydration and presence of other signs and symptoms as follows:

No dehydration	**ORS** (oral rehydration solution): less than 2 years:*50-100ml/motion(500 ml/day)*; more than 2 years:*100-200ml/motion (1000ml/day)*
Some Dehydration	**ORS:** *75cc/kg/4-6hrs* Details: less than 4 months:*200-400 ml/4hours;* 4-11 months*: 600-800 ml/4 hours ;* 12 -23 months*:600-800 ml/4hrs;* 2-4 years*: 800-1200 ml/4hrs;* 5-14 years*: 1200-2200 ml/4hrs ;* 15 years and older*: 2200-4000ml/4hrs* N.B. provide the mother with two days treatment of ORS as above.
Severe dehydration	Parental Rehydration Solution: 100ml/kg; than ORS:5ml/kg/hr(2hrs!) ; **or** ORS:120ml/kg intranasal
Bloody stool (dysentery)	Trimethoprim 10mg/kg; Sulphamethoxazol 50mg/kg for 5 days **if** there is no improvement for 2 days change to *another antibiotic* (sensitive to shigella): - Ampicillin 100mg /kg/5 days; **or** Nalidixic acid 60 mg /kg/5 days **if** there is still no improvement for 2 days and trophozoites are found in stools*: refer to hospital*
Persistent diarrhea (more than 14 days)	Treat dehydration than refer to hospital
Severe Malnutrition	Give ORS: 5ml/kg/hour and refer to hospital
Fever	Less than 2 months old: no treatment, *refer to hospital*; More than 2 months old: paracetamol: *15mg /kg /dose*

ACUTE RESPIRATORY INFECTION

Source: IMCI guidelines, MOHP,WHO/CHD,UNICEF, USAID.
Consultation with: Dr. Nagwa Khallaf, ARI Program Director.

Cough or Difficult Breathing

Very severe disease	-give first dose of intramuscular antibiotics** -In presence of wheezes(5%), give nebulized Salbutamol (5mg/ml)2-3 puffs ; -prevent low blood sugar (milk or sugar water); -refer to hospital
Severe Pneumonia	-give first dose of intramuscular antibiotics** - In presence of wheezes (5%), give nebulized Salbutamol (5mg/ml)2-3 puffs ; -prevent low blood sugar (milk or sugar water); -refer to hospital
Pneumonia	give appropriate antibiotic * for 5 days: - In presence of wheezes (5%), give oral Salbutamol 2.5 ml tds for 5 days (2-12 months old); 5ml , tds for 5 days (12 months to 5 years); -relieve cough with a safe remedy i.e. excess fluids
No pneumonia, cough or cold	-if cough persistsfor 30 days: refer for assessment; -safe cough remedy; -follow up for 5 days

Ear problems

Mastoiditis	-give first dose of intramuscular antibiotics**; -give first dose of Paracetamol for pain; -refer urgently to hospital
Acute ear infection	-give oral Antibiotics* for 5 days; -Paracetamol for pain
Chronic ear infection	refer to ENT Specialist

Sore throat

Throat abscess	-give first dose of intramuscular antibiotics**; -prevent low blood sugar; -refer urgently to hospital
Streptococcal sore throat	-single dose of Benzathine penicillin 600.000 unit (0.5 amp.) for child less than 5 years; -safe remedy for the throat; -Paracetamol for pain

***Appropriate Oral Antibiotic for acute Pneumonia and Ear infection**:

First line: Amoxycillin 125 mg syrup tds for 5 days
0-1month old: 1.25 ml/day
1-2 months: 2.5 ml/ day
2- 12 months old: 5 ml/ day
12 mn-5 years: 10ml/ day

Second line: Cotrimoxazol: 40mg Trimethoprim + 200 mg Sulphamethoxazole twice for 5 days

0-1month old:	1.25 ml/day
1-2 months:	2.5 ml/day
2- 12 months old:	5 ml/ day
12 months-5 years:	7.5ml/ day

****First dose of intramuscular antibiotics**:

0-2 months old:

Gentamycin (20 mg vial) Dose: 0.25 mg/kg

Benzyl Penicillin (1.000.000 units vial) Dose: 50.000 unit/kg

2 months-5 years old:

Chloramphenicol (1000mg vial) Dose: 40mg/kg

CHRONIC RHEUMATIC HEART DISEASE

Sources: 1.Report on: Rheumatic Fever / Rheumatic Heart Disease Control Program in Egypt, Sept. 1994.
2.Text Book of clinical medicine, Kumar and Clark.
Consultation with: Dr Nagwa Khallaf, Director, ARI Project.

Prophylaxis for diagnosed cases of Rheumatic Heart Disease:
I.M. long acting penicillin 1.200.000 U. every 4 weeks.
Or oral phenoxy methyl penicillin 250 mg every day.
Or erythromycin 250 mg every day. For patients allergic to penicillin.
-Treatment continues for 5 years after last attack or till the age of 20 .
-Periodic examination.
-Health education.

Prevalence: 0.2% of children 5 to 15 years of age.

ANTENATAL CARE

Source: Safe Motherhood Initiative, mother baby package, WHO 1994.
Consultation with: Dr Esmat Mansour, Director, Healthy Mother Healthy Child Project.

Number of visits: 5 visits

First visit:

One. General systemic examination
Two. Obstetric examination
Three. Investigations:
Urine: albumin, sugar, pus cells, RBCs, Crystals, casts.
Blood grouping and RH typing
Blood hemoglobin

In each subsequent visit:

a. General systemic examination
b. Obstetric examination
c. Urine albumin and sugar

Plus:

-*Ultrasonography:* once: 34th week of pregnancy.
-*Tetanus injection:*2 times in the first pregnancy, once in the subsequent ones, maximum 5 injections.[20 weeks,24 weeks antenatal in the first pregnancy.6 months later than every year for two years: full immunization for life.]
-*Iron, folic acid and multivitamin supplementation*:
In case of anemia: from the 3 rd month of pregnancy till the 3rd month postnatal.
If there is no anemia: from the 24th week of pregnancy till the 3 rd week post -natal
-*Blood sugar:* once

POSTNATAL CARE

Source: Consultation with: Dr Esmat Mansour, Director, Healthy Mother Healthy Child Project.

Number of visits: **Day 2, 4, 7, 15 postnatal**: home visits by nurse.
Day 21, 40 postnatal: Clinic visits by doctor, last for family planning and BCG injection for the baby.

NORMAL DELIVERY

Source: **Consultation with**: Dr. Abdel Aziz El Shobary, Gynecologist, Q.I. department, MOHP.

Drug or medical supply	**No.**
Glucose 5% 500 ml	**1**
Canula : 18	**1**
	1
Syntocinon amp. 5 units	**1**
Methargine amp.	**1**
I.V. line	
Cat gut amp.	**10**
Zylocaine 5-7 cc	**2**
Examination gloves	
Sterile gloves	**1**
Anti-septic Betadine 30 cc. For skin	**2**
Anti-septic Betadine 20 cc. For hand washing	
Alcohol 3 cc.	
Syringe 5cc	
Syringe 2 cc	
Gauze	**1*3**
Dressing	

Drug or medical supply	No.
Cotton	
Wrappings	
Methargine tablets	

SCHISTOSOMIASIS

Source: Text book of Clinical Medicine, Kumar and Clark.
Consultation with: Dr. Yehia Abdel Wahab, Executive Director, Shistosomiasis National Vertical Program.

Investigations:

In endemic areas a confident diagnosis can be often obtained on clinical backgrounds.

Diagnostic confirmation by urine & stool analysis is done before starting treatment & repeated after 3 months for up to 4 times till 2 negative results are obtained.

Regular urine and stool analysis should be done once a year to screen re-infection and treat accordingly.

Management:

Praziquantel is the drug of choice for both types of Shistosomiasis (Mansoni and Heamatobium). It is given as single a dose of 40mg/kg tab.=600mg. Maximum dose 4tab.

URINARY TRACT INFECTION

Source: Text Book of Clinical Medicine, Kumar and Clark

Management:
Anti microbial against E-Coli, the causative organism in 80% of cases of UTI:

Trimethoprim-Sulphamethoxazol bds
or Cephalexin 500mg tds.

In complicated cases:

Gentamycin 1-1.5 mg/kg I.V. tds
+ Amoxycillin 1 gmI.V./4 hrs

SEXUALLY TRANSMITTED DISEASES

Source: Consultation with: Dr. Anwar Abd El mobdi, Deputy Director, Skin & Venereal Hospital, Cairo(El hod El marrsoud).

Common STD in EGYPT:

1.	Gonococcal urethritis	30%
2.	Non gonococcal urethritis	26%
3.	Genital warts	17%
4.	Syphilis (1ry & 2ry)	8%
5.	Candidiasis (vaginal)	5%
6.	Scabies	4%

Treatment of Gonococcal Urethritis:

1. 1st drug of choice is Ciprofloxacine 500mg orally + Tetracycline 500 mg orally 4 times daily for 7 days.
2. Or Sulfamethoxazole 400mg + Trimethoprim 80mg : 10 tablet tds for 7 days

Investigations:
Gram stain smear + RPR(Rapid Plasma Reaction)

Treatment of Non Gonococcal Urethritis (Chlamydia Trichomatis):

1. Doxycycline 100 mg twice daily orally for 7 days.
2. Or tetracycline 500 mg orally 4 times daily for 7 days.
3. Or Erythromycin 500 mg orally 4 times daily for 7 days.
4. Or Zithromax 250 mg as 4 tablets once orally.

Investigations
Gram stain smear + RPR

Treatment of Genital warts:

1. Cryotherapy
2. Or podophyllum resins 25% in alcohol.

Treatment of Syphilis:
a. Early syphilis :
Benzathine penicillin 2.4 gm (2.4 million International Units)
Inter muscular injection as a one dose in two sites.
a. Late syphilis :
Benzathine penicillin 2.4 gm (2.4 million International Units)
Inter muscular injection as a one dose in two sites weekly for 3 weeks.

Investigations:
RPR + TPHA tests**.**

Treatment of Candidiasis (vaginal):

Topical Imidazoles.

Investigations:
Fungus Examination.

Treatment of sexually transmitted Scabies:

1. Permethrin 5 – 10 % preparations.
2. Or Benzyl benzoate 25% in alcohol.
3. OR gel cryotherapy.

Sources:

1- Text Book of Clinical Medicine, Kumar and Clark
Consultation with: Director of Diabetes Institution

Prevalence: Results of a Survey done in 1991-1994 by Diabetes Institute in Collaboration with: USAID, MOHP, CDC.

Management:

A) Diet Control
B) Health education
C) Oral Hypoglycemic drugs: used in maturity onset diabetes with adequate insulin storage.

1. Sulphonylurea
   a- first generation
   b- second generation (most commonly used)
2- Biguanides:
   c- Metformin & Phenormin.
   d- Insulin: generally used in 30 % of patients

Indications:

1. juvenile D.M
2. diabetes not controlled by oral hypoglycemics.
3. acute complications of any type of diabetes.
4. stress conditions as in cases of surgery.

<u>Treatment should be done on an individual basis, the following scheme can be generally followed :</u>

1. Children:
   a- start with two injections daily of intermediate acting insulin at a dose 8-10 U.
2. Patients with NIDDM:
   a- Twice daily injections of pre-mixed soluble & Isophane insulin. e.g. Mixture (most effective) .
3. Older patients:
   a- Single daily injection,0.2 -0.4 U / kg / day
4. Regular follow up Investigations:

1. fasting blood glucose level.
2. post prandial blood glucose level (done every 2-4 months if diabetes is controlled.)
3. kidney function tests.
4. risk factors for heart diseases as blood fats.
5. fundus examination. (*done yearly)*

FEVER

Source: Consultation with: Dr. Nagwa Khallaf, ARI program Director and Dr. Said Madkour, CDD program Director.

Fever of unknown: fever for more than 5 days
Give paracetamol and refer for further investigations and treatment accordingly.

First Aid of Acute Conditions

Convulsions:

Source: Text Book of Clinical Medicine, Kumar and Clark.

Anti-Convulsants: Diazepam 10 mg amp. I.V.
or phenobarbital (luminal) 200mg I.M.

Shock:

Source: Manual for rural health workers, diagnosis & treatment with essential drugs,1991.
Management: I.V. infusion of Dextran 70%.
I.M. Morphine 10 mg.

Accidents:

Source: Manual for rural health workers, diagnosis & treatment with essential drugs, 1991.

Patients with major bleeding of arms or legs.

Management:
I.V. infusion of Dextran 70%.
I.M. morphine 10 mg.

Acute attack of bronchial asthma:

Source: Davidson, Text book of Medicine.

Management:
Aminophylline 500mg amp. Slowly I.V.
Adrenaline 1/1000, 0.2-0.4 ml S.C. in severe cases
Oxygen therapy

Epistaxis:

Source: Text Book of E.N.T., El-Badrawy**.**

Management:
local ephedrine amp.
Anterior nasal pack.

Poisoning:

Source:

Snake bites: give antivenin serum after sensitivity test
scorpion stings: give antiscorpion serum after sensitivity test.
adrenaline 1/1000, 0.2-0.4 ml S.C. in cases of reaction

Acute renal colic:

Source: Davidson, text book of medicine

Investigation: Urine analysis.
Management: *anti-spasmodic* : Atropine sulfate amp.
or No-spa. Amp I.V.
or Spasmocin amp.I.V.
analgesic : ketoprofen 100 mg I.M
morphine sulfate 10mg amp. I.M.

refer to hospital for diagnosis & treatment of the cause.

Minor Burns & Superficial Wounds

Source: Manual for rural health workers, Diagnosis & Treatment with essential drugs, 1991.

Management:
First degree burn: give analgesics for pain: Acetyl salicylic acid 600mg tds for 2days or paracetamol 1gm tds for 2days.
Second degree burn: give analgesics for pain as above.
Third degree burn: If not extensive, cover with Vaseline gauze, then ordinary sterile gauze, followed by cotton wool & a bandage. Change the dressing every two days and give analgesics as above for pain.
Extensive third degree burns or large burns of hand and face: cover the burned area with Vaseline gauze, give analgesics or possibly pethidine, to relieve pain than transfer to hospital.

Protocol for Conjunctivitis

Source: Text Book of Ophthalmology, Mohamed Ayoub.

1. Infective Conjunctivitis:

Management: mechanical removal of the discharge by a piece of cotton.
Antibiotic eye drops: Sulphacetamide 10-30% 3-4times for 5days.

Chloramephincol 0.5% 3-4times for 5days

Antibiotic eye ointment: Teramycin at night for 5 days.

2. Allergic conjunctivitis:

Management: dark glasses & cold compresses.
Local antihistaminic eye drops: prisoline 4 times for 5days.
or Antistine 4 times for 5days.

Local vasoconstrictor eye drops: prefrin 4 times for 5days.

health education.
Referral of cases not responding to treatment.